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AUTHOR Valian, Virginia
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ABSTRACT

A study is reported that investigated American children's use of subjects in early speech and compared this cross-sectional data to longitudinal data on Italian children's production of subjects. Twenty-one American children aged 1.10 to 2.8 years were recorded in mother-child interactions and grouped by mean length of utterance (MLU) produced. Percentages of non-imperative, non-imitative utterances with verbs that also contained subjects were computed. Results suggest that children with an MLU of 2.5 or less understand that English requires subjects and can consistently express that understanding in their speech. Results also indicate that children can infer that it is permissible to omit subjects in certain contexts, but may not always know which contexts support omission. Data from five young speakers of Italian, a language in which null subjects are commonly allowed, at two different stages of acquisition (1.6 to 1.10 years and 2.0 to 2.5 years) show a very different pattern of subject usage. It is concluded that children's use of subjects has been erroneously described in the past, and that none of the current competence accounts of the null subject parameter are supported by these data. Methodological questions about interpretation of inconsistent usage are discussed. (MSE)

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CHILDREN'S PRODUCTION OF SUBJECTS: COMPETENCE, PERFORMANCE, AND THE NULL SUBJECT PARAMETER

Virginia Valian
Department of Psychology, Hunter College
695 Park Avenue, New York, NY 10021

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When and how do children determine that their language does or does not require overt surface subjects? English requires an overt subject. For example (taken from Hyams, 1986), in English, (1) is grammatical while (2) is not allowed. In contrast, in Italian, both (3) and (4)

(1) I am going to the movies
(2) * Am going to the movies

are allowed. There can be an empty or "null" subject in Italian.

(3) Io vado al cinema
I am going to the movies
(4) Vado al cinema
Am going to the movies

English and French are among the languages that require overt subjects; Italian and Spanish are among the languages that allow null subjects. The null subject parameter may also control other features of language features in addition to whether an overt subject is required (for a list of candidates, see Riemsdijk and Williams, 1986: 298-303). For example, languages that allow null subjects typically do not have "expletive", or referentially empty, pronouns.

An example, in English, of a referentially empty pronoun is the "it" in (5). In Italian, such a non-referential form of "it" does not

(5) It seems that Jane loves Mary
(6) Sembra que Jane ama Mary
Seems that Jane loves Mary

exist. The only equivalent of (5) in Italian is (6). Expletive "it" also occurs in "weather" expressions: "It's raining," "It's snowing," "It's cold," and so on.

The acquisition of the null subject parameter has received much recent attention, beginning with Hyams's (1986) original and provocative analysis. Hyams offered an explanation for an apparently ubiquitous phenomenon in American children's early speech: subjects are often absent. The sheer ubiquity of this phenomenon, which has never received a satisfactory explanation, made it an excellent candidate for study.

Hyams's (1986) explanation was that American children began acquisition with the null subject parameter set at the wrong value, the value which optionally allowed null subjects, and entailed other grammatical consequences. In addition to explaining why American children frequently omitted subjects, Hyams's (1986) account simultaneously explained other features of children's speech that apparently cooccurred with subject optionality. For example, her account predicted that children who omitted subjects would also fail to use expletive subjects when they were required, and that expletives would enter the children's repertoire at the same time that subjects were used as required. In addition, her account predicted that children would fail to use Modals until they used subjects consistently. Previously reported data appeared to confirm both predictions.

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What was so attractive about Hyams's (1986) analysis was that it accounted for a diverse body of phenomena under one theory. The theory provided both a linguistic analysis of the null subject parameter, and an account of acquisition based on the linguistic analysis. There have since been a variety of competing explanations for American children's inconsistent use of subjects.

Surprisingly, however, there are no numerical data bearing on American children's use of subjects. Although Hyams (1987) states that "it is well-known that thematic (referential) lexical subjects are optional in early child language and that expletive subjects are entirely lacking," that statement is incorrect. Existing accounts use either summary data reported in other contexts, or data from very small samples of children. This study presents the first quantitative data on American use of subjects, and the first comparison of American and Italian children's production of subjects.

The data show that children's use of subjects has been erroneously described. Further, none of the current competence accounts of acquisition of the null subject parameter is supported. Finally, the data raise difficult methodological questions about the interpretation of inconsistent usage by children.

Cross-sectional American data and longitudinal Italian data are compared. Twenty-one American children were audiotaped in conversations with their mothers, typically on two occasions no more than two weeks apart, for about 1 and 1/2 hours total. The children ranged in age from 1;10 to 2;8. MLU was computed from each taping session, and the average MLU was used. This average MLU ranged from 1.53 to 4. The children were divided into 4 unequal groups on the basis of their MLU distribution. Group I consists of 5 children between MLU 1.53 and 1.99. Group II consists of 5 children between MLU 2.24 and 2.76. Group III consists of 8 children between MLU 3.07 and 3.72. Group IV consists of 3 children between 4.12 and 4.38. In this sample of children MLU and age were highly correlated, $r = .74$.

The children's speech was coded, and several categories were excluded from further analysis: utterances with unintelligible portions, single word assents or dissents, imitations, and routine utterances. In addition, for the analyses here, imperatives without subjects were excluded. Utterances were classified as imperatives on the basis of context.

Table 1 shows what percentage of the children's non-imperative, non-imitative, utterances with verbs contained subjects. The five children in Group I, between MLU 1.53 and 1.99, used subjects close to 70% of the time when they produced utterances containing verbs. There is a shift in percentage of usage between Group I and Group II. Group II, whose MLUs range between 2.24 and 2.76, used subjects close to 90% of the time. Performance was consistently high thereafter, increasing slightly in the next two groups. As the standard deviation indicates, Group I was the most variable group.

The high consistency of usage in Group II suggests that children with an MLU of 2.5 or less understand that English requires subjects, and can consistently express that understanding in their speech, if we

take 85-90% usage to be consistent usage. "Earliness" is in the eye of the beholder, but such a high level of usage at this MLU indicates that, even in "early" child language, American children understand that their language is not a null subject language.

The next question is how to interpret the 70% average figure for Group I, especially considering the variability in this group, where two children had subject use as low as 55%. There are two possibilities. One is that the child has not yet established the correct value. The child could think either that subjects are optional, or could be unsure about whether subjects are optional or obligatory. Either way, on possibility one, the child's competence is deficient. The second possibility is that the child understands that subjects are required, but is unable to express that understanding in her speech. On possibility two, the child's performance is deficient.

How can one decide between the two possibilities? Two strategies can be used. One is to explore both competence and performance factors within English. The other is to compare English-speaking children with children of a null subject language. The American data suggest that a performance explanation can handle all the facts, a conclusion supported by the Italian data, which show that American and Italian children differ markedly in their productions.

To begin with the American children, we can examine other properties that the children's speech should have if they understand that subjects are obligatory, using the higher-MLU children as a benchmark. If Group I children believed their language was a null subject language, one might expect them to use particularly few pronominal subjects, since it is pronominal subjects that can be omitted. The subjects that are expressed should be lexical rather than pronominal. Instead, a majority of Group I children's subjects are pronouns - 77%. Pronouns included personal pronouns, demonstratives, and interrogatives. Pronoun use continues to be high, comprising 87% of Group II's subjects, 85% of Group III's, and 84% of Group IV's.

Another potential competence measure is production of the expletive "it". But if our benchmark is the higher-MLU children, expletive usage cannot serve as a measure. For all 4 groups of children, even those who are consistently producing subjects, there is little expletive usage, and little usage of expletive contexts. Children of this age and at this level of development are seldom interested in talking about the weather. Other contexts that would support expletive usage require embedded structures that are not within the children's repertoire.

To the extent that there is use of expletives, it occurs across the board. For example, the lowest MLU child produced an expletive: "When it's noe-y," where "noe-y" equals "snowy" or "snowing". In fact, that was this child's only production of the word "it". Since even the contexts in which expletives would be required are rare, the lack of expletives is not meaningful.

A third competence measure is presence of Modals, which, on some theories of the null subject parameter, could be related to production of subjects. Only the lowest MLU child failed to produce Modals. All others produced them, though usage was infrequent in Group I. Table 2

shows Modal usage for each group. Usage is expressed by using the number of strings with Verbs as a baseline. Thus, the figures show what proportion of strings with Verbs included a Modal. Modal usage increases as a function of age and MLU, but there is no hint of a step function. That is, Modal usage does not suddenly begin when subject use becomes consistent, nor dramatically increase when subject use becomes consistent. Nor is Modal usage is correlated with subject usage, once MLU and age are partialled out ($r = -.03$). Children's use of subjects is roughly constant regardless of how many Modals they produce.

What about performance measures? The data I will report here complement P. Bloom's (1989). If children's usage of subjects is tied to their overall development and ability to produce longer and longer utterances, then there are certain correlations one might expect. For example, MLU, age, and subject use should correlate, and they do. In this sample, the simple correlation between MLU and subject use is .77 ($p < .001$), and the simple correlation between age and subject use is .74 ($p < .001$). When a partial correlation between MLU and subject use is computed, the correlation is .48 ($p = .03$). Thus, the data suggest that children use subjects more as their MLU increases.

Another performance measure concerns correlations between Verb usage and subject usage. As Table 2 shows, children's Verb usage increases markedly from Group I to Group IV. Verb usage, unlike Modal usage, is highly correlated with subject usage, even when MLU and age are partialled out, $r = .78$, $p < .001$. As children produce more utterances with Verbs, they correspondingly produce subjects for those Verbs. Notice that Verb production is theoretically independent of subject use as measured here. The children could maintain a constant proportion of subject usage as their Verb production goes up.

The fact that subject usage and Verb usage are linked across the entire range of children suggests that children know that Verbs require subjects. As they are able to handle the complexity involved in including Verbs, they are correspondingly able to handle the complexity involved in including subjects. If the children believed that subject use was optional, their usage should remain roughly constant even though Verb usage increases.

A final factor can be introduced to account for Group I's inconsistent production of subjects. Although subjects are grammatically required in English, in some contexts speakers omit subjects. An example from the NY Times is, "Seems like she always has something twin-related perking." Other examples are "Want your lunch now?", "Having a good time?". The American child hears examples of subject omission, and has to determine just what contexts acceptably allow omission (for more discussion, see Valian, 1989).

To summarize, the child operates under performance limitations. She can also infer that it is acceptable to omit subjects in certain contexts (because she hears strings without subjects), without yet having zero'ed in on the contexts that support omission (because they are very complicated). As a result, subjects are absent too frequently.

The second strategy for assessing the significance of American children's very early inconsistent usage is to compare the children's

performance with that of young speakers of a null subject language. Mazuka, Lust, Wakayama, and Snyder (1986), for example, looked at early Japanese usage. Italian data, consisting of longitudinal transcripts collected by G. Tirondola, and lent to me by F. Antinucci, provide an appropriate contrast. There are 5 Italian children, each 1;6-1;7 at the start of taping. They were recorded monthly for a year, except for one summer break, which occurred after the 5th taping. Each recording session was short, about 15-30 minutes. Because so few utterances are available, the 11 sessions are divided into Time I and Time II.

Time I covers the first 5 months, before the summer break. The children were about 1;6 to 1;10 during that time. Time II covers the last 6 months, after the summer break. The children were 2;0 to 2;5 during that time. The Italian children at Time II were thus on the average somewhat older than the American children in Group I, who averaged 2;0. However, it would be desirable to have a linguistic way of comparing the children. Since MLU cannot be calculated in the same way with Italian children as with American children, it was not computed. We did calculate the number of utterances with Verbs, in the same way that we had for the American children. At Time I, 27% of the Italian children's utterances contained a Verb. That was the percentage for the American children in Group I. At Time II, 39% of the Italian children's utterances contained a Verb.

At both Time I and Time II, the Italians differ from even Group I Americans. Table 3 shows the children's use of subjects. The total proportion of non-imperative non-imitative strings containing subjects stays constant at about .30, less than half the average usage of Group I Americans. This shifts what has to be explained about the American data from, why do Group I Americans use subjects so little, to, why do Group I Americans use subjects so much? The comparison suggests that Group I Americans already understand that subjects are syntactically required.

To continue with the Italian children, at Time I the Italian children produce twice as many post-verbal as pre-verbal subjects, echoing Bates (1976). This may reflect the children's initial comprehension that overt post-verbal subjects carry focus information. By Time II the children have doubled their production of pre-verbal subjects, but <u>total</u> production of subjects remains the same from Time I to Time II. Again the Italians differ from the Americans, in that they do <u>not</u> increase their overall rate of subject production, within the time period sampled.

The Italian children also produce less than half as many pronominal subjects as the American children. Recall that for Group I of the American children, about 75% of the subjects were pronouns. At Time I 22% of the Italian children's subjects were pronouns, and at Time II 35% were pronouns. At both Times I and II, pronouns were more common in post-verbal than pre-verbal position. This, again, may reflect the fact that post-verbal subjects tend to be the focus.

With respect to expletive contexts, the Italian children did produce a few verbs that demanded the absence of a subject. At Time I there was one instance; at Time II there were a total of 14 instances, produced by 4 of the 5 children, involving 3 verbs: <u>bisognare</u>, <u>piovere</u>,

bastare. While this is a low rate of production, it is more frequent than is the case for the American children. This may, however, reflect the meanings of 2 of the 3 verbs: bisognare has to do with there being a need for something, and bastare with there being enough of something.

With respect to Modals, the Italian children produced many fewer than the American children. At Time I there was one occurrence; at Time II 3 of the 5 children produced 7 examples. If Modal use is relativized to Verb use, as it was with the American children, that is a total of 6/392 non-imperative utterances with Verbs, or a proportion of .015, about half the American production.

In sum, the lowest-MLU group of American children does not look anything like either Time I or Time II Italian children. The American children produce, from the beginning, more subjects, more pronominal subjects, and more Modals. By itself, such data are not definitive, since the children may be matching the adult frequencies of usage. American children could think English is a null subject language, where the option of omitting the subject is infrequently used by speakers. What makes that interpretation less likely, however, is the fact that all children operate under production constraints. If American children believed their language was a null subject language, and needed to select constituents to omit, subjects would be an excellent choice, even if the adult frequency were high.

Thus, it is hard to explain the differences between American and Italian children if we assume that both language groups think subjects are optional, and if we assume that both language groups operate under production constraints. If we instead conclude that even the lowest MLU group of American children understands that subjects are syntactically required in English, we can explain their inconsistent usage as due to two factors: production constraints plus the existence of acceptable strings in English that lack subjects.

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Table 1

American Children
Proportion of Non-Imperative Non-Imitative Utterances
Containing a Verb Which Also Contain a Subject

Mean MLU MLU Range	Mean Age Age Range	Mean Proportion Subject (s.d.) Proportion Subject Range
Group I (N = 5, Mean of 86 utterances with a Verb per child)		
1.77 1.53-1.99	2;0 1;10-2;2	.69 (.12) .55 - .82
Group II (N = 5, Mean of 207 utterances with a Verb per child)		
2.49 2.24-2.76	2;5 2;3-2;8	.89 (.04) .84 - .94
Group III (N = 8, Mean of 286 utterances with a Verb per child)		
3.39 3.07-3.72	2;5 2;3-2;6	.93 (.04) .87 - .99
Group IV (N = 3, Mean of 250 utterances with a Verb per child)		
4.22 4.12-4.38	2;7 2;6-2;8	.95 (.03) .92 - .97

Table 2

American Children's Modal and Verb Usage

	Subject Usage	Modal Usage[a]	Verb Usage[b]
Group I	.69	.03	.27
Group II	.89	.06	.52
Group III	.93	.09	.70
Group IV	.95	.14	.79

Note. In all cases, strings with unintelligible segments, single word assents or dissents, imitations, or imperatives, were excluded.

[a] For Modal Usage, the numerator is number of Modals and the denominator is number of strings with Verbs.

[b] For Verb Usage, the numerator is number of strings with Verbs and the denominator is number of strings.

Table 3

Italian Children

Proportion of Non-Imperative Non-Imitative Utterances Containing a Verb Which Also Contain a Subject

Pre-Verbal (range)	Post-Verbal (range)	Total (range)
Time I (N = 5, Mean of 39 utterances with a Verb per child)		
.09 (.05-.19)	.21 (.15-.24)	.29 (.22-.43)
Time II (N = 5, Mean of 78 utterances with a Verb per child)		
.15 (.08-.18)	.14 (.06-.23)	.29 (.18-.41)